Commonwealth of Pennsylvania
DEPARTMENT OF PUBLIC INSTRUCTION
Harrisburg

Manual of Instruction

COURSE 8

INCREASING EGG PRODUCTION

Rural War Production Training Program

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Prepared under the authority of the State Board for Vocational Education by the Department of Rural Education, The Pennsylvania State College

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PREFACE

Course 8, Increasing Egg Production, is one of a series of courses which have been prepared in the "Food for Victory" program. The objective has been to set forth in brief form the phases of poultry husbandry considered pertinent to the immediate problem of Increasing Egg Production in Pennsylvania.

This manual is organized into five sections:

I. SUGGESTED COURSE CALENDAR

II. INTRODUCTION

III. SUGGESTED LESSON OUTLINES

IV. SUGGESTED REFERENCE MATERIAL
- Books (A)
- Bulletins and Circulars (B)
- Visual Aids (C)

V. SUGGESTED APPROVED PRACTICES WHICH SHOULD DEVELOP FROM THE COURSE

The manual was prepared by Russell B. Dickerson, Itinerant Teacher-Trainer, Specialist in Young and Adult Farmer Instruction, Department of Rural Education, The Pennsylvania State College. The preparation was directed by H. C. Fetterolf, Chief, Agricultural Education, State Department of Public Instruction; and Henry S. Brunner, Head, Department of Rural Education, The Pennsylvania State College.

Special recognition is given Professor H. C. Knandel, Head, Department of Poultry Husbandry, The Pennsylvania State College, together with members of his staff, for invaluable assistance and guidance in setting up the suggested lesson outlines and in deciding upon the most current references pertinent to "Increasing Egg Production."

I. SUGGESTED COURSE CALENDAR

Lesson Number	Name of Job	Date of Meeting
1	The Poultry Industry in War-Time	
2	Housing Poultry	
3	Brooding Chicks and Rearing Young Stock	
4	Determining the Food Requirements of Poultry	
5	Feeding Chicks and Growing Stock	
6	Feeding Laying and Breeding Stock	
7	Improving the Flock through Breeding and Selection	
8	Controlling Diseases and Parasites of Young Stock	
9	Controlling Diseases and Parasites of Mature Stock	
10	Producing and Marketing High Quality Eggs	

II. INTRODUCTION

This manual was prepared as a guide to teachers and supervisors in conducting instruction with young and adult farmers in the OSYA "Food for Victory" program. It is designed to facilitate more effective preparation by the teachers undertaking to meet the emergency need through commodity courses.

The ten (10) suggested lesson topics or jobs were selected after careful analysis of the whole field of egg production, in conference with Professor H. C. Knandel. The lesson outlines are purely suggestive and it is expected that each lesson will be modified to meet local conditions.

In many instances jobs other than the ten included herein will be considered important enough in certain sections of the commonwealth to be included along with, or instead of, some of those listed. It is expected also that more than one meeting will be necessary to give satisfactory instruction in some jobs.

The aims and the problems for study and discussion set up in each of the ten lesson outlines are considered applicable to the respective jobs but they are by no means considered all-inclusive. If any or all of the suggested problems for study and discussion are incorporated into a similar course of study the suggested references will be found helpful to the busy teacher. They are offered for the express purpose of bringing teacher efficiency to its best.

The reference materials suggested on pp. 21-23 are considered pertinent to the immediate problem of Increasing Egg Production. It is advised that at least one copy of each should be available for easy reference. It is assumed that a variety of references that are pertinent to Increasing Egg Production, are already on hand in most schools. They will probably include texts, bulletins, charts, film strips and others, and they may furnish a large part of the reference material needed. It is important however, to use the most current references for approved practices in meeting emergency problems. The bulletins of The Pennsylvania Experiment Station are prepared for Pennsylvania conditions and they generally are the most reliable sources available.

For the convenience of the teacher, the suggested reference materials on pp. 21-23 are given by key designation as follows: Books (A), Bulletins and Circulars (B), and Visual Aids (C). In preparing a lesson on any one job, the teacher will find specific references to the different problems suggested. For example, (1) if the reference is A-1, p. 7, it refers to material on page 7 of the

first book listed, the material found there is considered pertinent to the problem suggested; (2) if the reference is B-3, it refers to bulletin No. 3 on the list and implies that the content of the entire bulletin is pertinent to the problem; (3) if C-6 is given as a reference it will refer to item No. 6 in the Visual Aids list.

The suggested approved practices which should develop from the course are set forth on p. 24 as guides to the teacher. During each lesson certain conclusions should be reached which should result in the adoption of approved practices by individual farmers. These will constitute the basis for the program of follow-up instruction.

Teachers who plan to organize and conduct a course in Increasing Egg Production are urged to follow the suggestions given in another manual of instruction in the series entitled, "Suggestions To Teachers And Supervisors For The Development And Conduct Of Agricultural Commodity Courses."[1]

The suggestions set forth in that manual were prepared for the purpose of aiding individuals in organizing and conducting Agricultural Commodity Courses in the Rural War Production Training program. The manual includes the following sections:

I. OBJECTIVES OF COURSES IN THE INCREASED PRODUCTION OF FARM COMMODITIES.

II. THINGS TO DO BEFORE ORGANIZING A COMMODITY COURSE.

III. FORM FOR SURVEYING OUT-OF-SCHOOL RURAL AND NON-RURAL PERSONS.

IV. SUGGESTED TEACHER PREPARATION.

V. A SUGGESTED TEACHING PLAN USING THE CONFERENCE PROCEDURE.

VI. THE IMPORTANCE OF CURRENT REFERENCES.

VII. PROVIDING FOLLOW-UP OF INSTRUCTION.

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[1] Rural War Production Training, State Department of Public Instruction, Harrisburg, Pa.

III. SUGGESTED LESSON OUTLINES

JOB 1. THE POULTRY INDUSTRY IN WAR-TIME

A. Teaching aims—To develop the ability of the farmer

1. To meet the demands of this country and the United Nations for increasing quantities of eggs and poultry meat.
2. To recognize the importance of poultry for egg and meat production in the war emergency.

B. References for this lesson—(see key list on pp. 21-23)

1. (A)—1, 2
2. (B)—22, 23, 24, 25, 33, 37, 38
3. (C)—17, 21

C. Suggested problems for study and discussion—

1. The need for increased production of eggs and poultry meat.
2. The economic position of farm poultry. B-25, p. 1.
3. Surveying the poultry industry with respect to increasing the production of eggs and meat. A-1, Ch. 1; B-22; B-23; B-24
   a. Fowl numbers and value in the U. S., in Pa., and locally
   b. Egg production and value in the U. S., in Pa., and locally
   c. Egg consumption in the U. S., in Pa., and locally
   d. Egg prices and probable trend
   e. The labor situation and probable trend
   f. Adjustments needed to meet changing conditions
   g. Factors necessary for success. A-1, Ch. 18; A-2, Ch. 28; B-33
4. Financing the poultry enterprise
   a. Secure credit and credit information from—
      (1) The local bank
      (2) The production credit association
      (3) The farm security administration

JOB 2. HOUSING POULTRY

A. Teaching aims—To develop the ability of the farmer
   1. To provide adequate shelter for poultry.
   2. To provide protection against wind, drafts, dampness, rodents, filth, thieves, and extreme temperatures.
   3. To keep housing costs at a minimum.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1, 2
   2. (B)—1, 2, 3, 4, 5, 28, 32
   3. (C)—1, 2

C. Suggested problems for study and discussion—
   1. Determining the value of housing poultry. A-1, p. 181
   2. Locating the poultry house with respect to—
      a. Exposure
      b. Air drainage
      c. Water drainage
      d. Temperature
      e. Shade
      f. Convenience
      } A-1, pp. 182-185
   3. Requirements of poultry houses with respect to—
      a. Temperature. A-1, p. 186
      b. Ventilation. A-1, p. 187
         (1) Provide adequate air space. A-2, p. 82
      c. Sunlight. A-1, p. 190
      d. Adequate floor space. A-1, p. 191
      e. Ease of disinfecting. A-1, p. 192
   4. Kinds of poultry houses. C-1; C-2
      a. Brooding and rearing houses. A-1, p. 193; B-4, pp. 2-7
      b. Laying houses. A-1, p. 195; B-4, pp. 7-12; B-1
      c. Breeding houses. A-1, p. 199
   5. Variations in style of roof. A-1, p. 200; B-4, p. 13; C-1; C-2
      a. Shed
      b. Combination
      c. Gable
      d. Gambrel
   6. Cost and durability of poultry houses. A-1, p. 202
   7. Remodeling farm buildings for poultry. B-2; A-1, pp. 196-198; C-1; C-2
   8. Constructing new poultry buildings. A-1, Ch. 10; B-4, pp. 22-25; C-1; C-2
      a. Walls. A-1, p. 207
      b. Floors. A-1, p. 208

c. Windows and ventilation. A-1, p. 211; B-5
d. Roof materials. A-1, p. 212
e. Specifications for brooder houses. A-1, pp. 214-219
f. Specifications for range shelters. A-1, pp. 219-223; B-3
g. Specifications for multiple-unit laying houses. A-1, pp. 223-231; B-1

9. Preparing the poultry house for efficient egg production.
   a. Insure a parasite-free and a disease-free house. A-2, p. 34
   b. Provide interior fixtures with judgment. A-1, p. 237
      (1) Feed hoppers. A-1, pp. 238-241; B-4, pp. 29-32
         (a) Provide adequate feeding space. A-1, p. 241
      (2) Grit and shell hoppers, green feed hoppers. A-1, p. 241
      (3) Water receptacles. A-1, pp. 241-242; B-1, p. 13
         (a) Provide adequate drinking space. A-2, p. 67
      (4) Nests. A-1, p. 243; B-4, p. 27
         (a) Provide adequate numbers. A-1, p. 244
      (5) Roosts. A-1, pp. 241-243; B-4, p. 19; A-2, p. 55
         (a) Provide adequate perch space. A-1, p. 243
      (6) Droppings boards. A-1, pp. 241-243; B-4, p. 19; A-2, p. 58
      (7) Artificial lights. A-1, pp. 171-176; B-4, p. 25
         (a) Provide adequate distribution of light. A-1, p. 173
      (8) Broody coops. A-1, p. 246
   c. Repair and clean the windows. A-2, p. 35
   d. Provide proper litters and nest materials. A-1, p. 243; B-32
   e. Arrange interior fixtures for efficiency. A-2, p. 92

10. Provide labor saving equipment. A-1, pp. 249-253
   a. Feed bins
   b. Feed carriers
   c. Litter carriers
   d. Water heaters
   e. Spray pump
   f. Catching hook and net
   g. Catching crate
   h. Scales
   i. Incinerator

JOB 3. BROODING CHICKS AND REARING YOUNG STOCK

A. Teaching aims—To develop the ability of the farmer
   1. To determine the most efficient methods of brooding chicks.
   2. To rear a high percentage of healthy stock.
   3. To rear a flock of healthy pullets to maturity.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1, 2
   2. (B)—3, 4, 6, 25, 28, 30
   3. (C)—1, 2, 14, 15, 16

C. Suggested problems for study and discussion—
   1. Suitable housing is essential. A-1, p. 74; B-4
      a. Provide adequate floor space
   2. Types of brooder houses. A-1, p. 76; C-1; C-2
      a. Colony b. Multiple-unit c. Battery
   3. Types of brooders (sources of heat) A-1, p. 77
      a. Colony
         (1) Coal (4) Oil
         (2) Wood (5) Electric. B-6
         (3) Gas
      b. Long continuous pipe
      c. Battery
   4. The selection of a brooder is dependent upon several factors. A-1, p. 78
   5. Preparing the brooder house and brooder for the chicks. A-2, p. 446
      a. Provide essential equipment. A-1, pp. 84-87; C-14
         (1) Hover and guard (3) Waterers
         (2) Hoppers (4) Roosts
         (5) Litters—clean sand, shavings, ground corn cobs, etc.
   6. Regulating brooder temperature. A-1, p. 82; A-2, p. 458
      a. Operating the brooder. A-2, pp. 448-450; C-15
   7. Providing ventilation. A-1, p. 87
      a. Provide pure air without draft.
   8. Providing sanitation. A-1, p. 88
   9. Providing protection. A-1, p. 88
   10. Moving the chicks to the range. A-1, p. 90
   11. Separating the sexes. A-1, p. 90
   12. Rearing young stock on range. A-1, p. 91; B-3
      a. Providing suitable range quarters and equipment
      b. Characteristics of a desirable range.
   13. Confinement rearing. A-1, p. 96
   14. Brooding records are desirable. A-1, p. 98; A-2, pp. 186-188; C-16

JOB 4. DETERMINING THE FOOD REQUIREMENTS OF POULTRY

A. Teaching aims—To develop the ability of the farmer
   1. To determine the purposes of food by poultry.
   2. To determine the food elements needed by poultry.
   3. To determine the characteristics of an ideal poultry ration.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1, 3
   2. (B)—13, 34
   3. (C)—3, 4, 9, 10

C. Suggested problems for study and discussion—
   1. Determining the purposes for which food is used by poultry.
      a. Preservation of life. A-1, p. 102
      b. Maintain a state of good health. A-1, p. 103
      c. Growth and fattening. A-1, p. 104; A-3, pp. 807-818
      d. Egg production. A-1, p. 104; A-3, pp. 799-807
      e. Reproduction. A-1, p. 105; A-3, pp. 789-799
   2. Supplying the nutritive elements necessary in poultry feeding. C-9; C-10
      a. Water. A-1, p. 106; A-3, p. 825
      b. Proteins—values and sources. A-1, pp. 108-113; A-3, p. 821
      c. Carbohydrates—values and sources. A-1, pp. 113-116; A-3, p. 820
      d. Fats. A-1, p. 116
      e. Minerals—purposes and sources. A-1, pp. 117-121; A-3, p. 822
      f. Vitamins—purposes and sources. A-1, pp. 121-131; A-3, p. 823; B-13; C-3; C-4
      g. Grit. A-3, p. 823
   3. The organs of digestion and the digestive process of the chicken. A-1, pp. 144-147

4. Determining the characteristics of an ideal poultry ration.
    a. Balance of nutrients
    b. Palatability
    c. Variety
    d. Bulkiness
    e. Wholesomeness
    f. Effect on product
    g. Economy

    } A-1, pp. 134-139

5. Determining the acceptable methods of feeding poultry.
    a. Grain feeding. A-1, p. 140
    b. Dry mash feeding. A-1, p. 140
    c. Grain and mash feeding. A-1, p. 141; A-3, p. 830
    d. All-mash feeding. A-1, p. 141; A-3, p. 830
    e. Cafeteria plan. A-1, p. 142
    f. Moist-mash feeding. A-1, p. 143
    g. Pellets. A-1, p. 143; A-3, p. 832
6. Emergency poultry rations. B-34

JOB 5. FEEDING CHICKS AND GROWING STOCK

A. Teaching aims—To develop the ability of the farmer

1. To feed chicks and growing stock by the best known methods.
2. To balance and feed good starting and growing rations.
3. To feed chicks and growing stock for uniform growth and development.

B. References for this lesson—(see key list on pp. 21-23)

1. (A)—1, 3
2. (B)—7, 8, 14, 27, 28, 30
3. (C)—14

C. Suggested problems for study and discussion—

1. The first feeding. A-1, p. 150; B-7
2. Providing suitable hoppers and waterers. B-7; C-14
   a. Provide adequate feeding space. A-1, p. 151
   b. Provide adequate watering space. A-1, p. 152
3. Use the best methods of feeding. A-1, p. 153; B-8
   a. Hopper method
   b. Hopper and litter method
4. A constant supply of clean, fresh water is essential. B-7
5. Starting rations. A-1, p. 154
6. Rations for growing stock on range. A-1, p. 155; A-3, p. 835; B-7
   a. Poultry pastures. B-14; B-27
7. Rations for confinement feeding. A-1, p. 156
8. Developing rations. A-1, p. 156
9. Feed consumption, growth standards, and mortality. A-1, pp. 157-160; B-7

JOB 6. FEEDING LAYING AND BREEDING STOCK

A. Teaching aims—To develop the ability of the farmer

1. To feed mature hens in accordance with the best known methods.
2. To balance and feed a good ration to laying hens.
3. To balance and feed a good ration to breeders.
4. To produce eggs of uniform quality.

B. References for this lesson—(see key list on pp. 21-23)

1. (A)—1, 3
2. (B)—9, 10, 11, 12, 14, 27, 28, 31
3. (C)—14

C. Suggested problems for study and discussion—

1. Feeding for profit. A-1, p. 162
2. Diets for laying and breeding stock. A-3, p. 834
3. Methods of feeding layers and breeders. A-1, p. 163; B-9; B-12; C-14.
   a. Adequate hopper space is essential. A-1, p. 165; B-10, p. 2
   b. Oyster shell and grit should be available. A-1, p. 165; B-10, p. 4
   c. Green feed is relished by fowls. A-1, p. 165; B-14; B-27
4. Egg producing rations. A-1, pp. 166-168; B-12; A-3, p. 835
5. Rations for breeding fowls. A-1, p. 168; A-3, 835
6. Special practices to increase feed consumption and egg production.
   a. Artificial illumination. A-1, p. 171; B-10, p. 3
   b. Supplementary feeds are sometimes necessary. B-10, p. 4; B-12, p. 4
      (1) Moist mash. A-1, p. 176
      (2) Fleshing mash.
      (3) Mangle beets and cabbage.
      (4) Well cured and carefully preserved alfalfa, clover, or soybean hay.
7. Amounts of feed consumed. A-1, p. 178
8. A constant supply of clean, fresh water is essential. B-10, p. 2; B-11

JOB 7. IMPROVING THE FLOCK THROUGH BREEDING AND SELECTION

A. Teaching aims—To develop the ability of the farmer
   1. To select desirable pullets for the laying flock.
   2. To cull the laying flock regularly.
   3. To select desirable laying hens for the breeding flock.
   4. To establish and maintain a good laying and breeding flock.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1, 2, 5, 6
   2. (B)—15, 25, 35, 36
   3. (C)—5, 11, 16

C. Suggested problems for study and discussion—
   1. Some main objectives and methods in poultry breeding. A-5, pp. 979-987
   2. What breeding has accomplished. A-1, p. 21; A-6
   3. Important classes of poultry. A-1, pp. 26-35; A-6
   4. Selection of a breed. A-1, p. 35; C-5; A-6
   5. Determining the relation of selection to profits from poultry. B-15, p. 1
   6. Considering the general basis for selection. B-15, pp. 2-4
      a. Relation of health to selection.
      b. Influence of feeding on selection.
      c. Importance of good management.
      d. Shape of head and body conformation.
   7. Distinguishing the layers from non-layers—physiological changes. B-15, p. 4-7; A-1, p. 296
      a. Condition of comb and wattles
      b. Condition of vent
      c. Condition of pubic bones
      d. Condition of abdomen
      e. Condition of lateral processes of the sternum
   8. Determining the persistent producers. B-15, pp. 7-8
      a. Trap nesting.
      b. Changes in pigmentation
   9. Studying molt in relation to production. B-15, pp. 9-12; A-1, pp. 299-303
      a. The order of molting.
      b. Estimating the length of molting period

10. Developing a high laying strain through selection. B-15, pp. 12-15
    a. Earliness of sexual maturity.
    b. Good rate of laying.
    c. Comparatively little broodiness.
    d. Persistence of egg production.
11. Using a practical system of banding. B-15, p. 12
12. Handling the birds. B-15, p. 16; C-11
13. Following a selection calendar and chart. B-15, pp. 16-18; C-11
    a. Marketing the culls. A-1, pp. 388-405
        (1) Storing poultry meat for home use. B-35
14. Utilizing a practical breeding program. A-1, p. 305
15. Keeping records on the flock. A-2, Ch. 9; A-1, Ch. 18; C-16
    a. Egg records
    b. Mortality and culling records
    c. Financial records—inventory, expenses, receipts.
16. Evaluating the records. A-2. Ch. 10; A-1, Ch. 18

JOB 8. CONTROLLING DISEASES AND PARASITES OF YOUNG STOCK

A. Teaching aims—To develop the ability of the farmer
   1. To maintain the health of the young flock.
   2. To observe poultry carefully to detect symptoms of diseases and parasites.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1, 4
   2. (B)—16, 17, 28, 29
   3. (C)—8

C. Suggested problems for study and discussion—
   1. Consider the nature and importance of controlling poultry diseases and parasites. B-17, p. 2; A-4, pp. 1003-1006; A-1, p. 328; A-4, p. 941
   2. Prevent diseases and parasites. B-17, p. 2; A-1, p. 361; B-16
      a. Sanitation is essential
      b. Vaccination is necessary in some communities
   3. Control and eradicate diseases and parasites. B-17, p. 3; A-4, pp. 1007-1014
      a. Isolate affected birds.
   4. Disinfectants and disinfection. B-17, p. 3; A-1, p. 360; B-16, p. 3
   5. Start with well-bred healthy chicks. B-16, p. 1
      a. Purchase chicks from reliable nearby sources.
      b. Purchase chicks from flocks of known production.
      c. Purchase chicks from disease free flocks.
   6. Diseases and ailments most common to young stock. B-16
      a. Pullorum disease. A-4, pp. 931-943; C-8
      b. Coccidiosis. A-4, pp. 1041-1047
      c. Colds. (Coryza) A-4, pp. 969-972
      d. Leg weakness (Vitamin D deficiency). A-4, p. 1081
      e. Cannibalism. A-4, p. 1098
      f. Bronchitis. A-4, p. 968
      g. Laryngotracheitis. A-4, pp. 963-968
   7. Practice clean management. B-16, pp. 2-6
      a. Clean brooder houses
      b. Clean ground
      c. Clean litter
      d. Clean feed
      e. Clean water

JOB 9. CONTROLLING DISEASES AND PARASITES OF MATURE STOCK

A. Teaching aims—To develop the ability of the farmer
   1. To maintain the health of the laying and breeding stock.
   2. To observe poultry carefully to detect symptoms of diseases and parasites.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1, 4
   2. (B)—16, 17, 26, 28, 29
   3. (C)—7, 8

C. Suggested problems for study and discussion—
   1. Consider the nature and importance of controlling poultry diseases and parasites. B-17, p. 2; A-4, pp. 1003-1006; A-1, p. 328; A-4, p. 941
   2. Prevent parasites and diseases. B-17, p. 2; A-1, p. 361
      a. Sanitation is essential.
         (1) Clean ground
         (2) Clean litter
         (3) Clean feed
         (4) Clean management
      b. Vaccination is necessary in some communities.
   3. Control and eradicate parasites and diseases. B-17, p. 3; A-4, pp. 1007-1014
      a. Isolate affected birds.
   4. Disinfectants and disinfection. B-17, p. 3; A-1, p. 360; B-16, p. 3
   5. Maintain healthy flocks.
      a. Brood and rear healthy pullets.
      b. Keep young stock away from mature stock.
      c. Purchase pullets from disease free sources.
   6. Diseases, parasites and ailments common to mature stock.
      a. Bacterial diseases. A-1, pp. 330-339; B-17, p. 8
         (1) Infectious coryza (Cold). A-1, pp. 330-339; B-17, p. 8
         (2) Fowl tuberculosis. A-4, pp. 246-247; A-4, p. 997; C-7
         (3) Pullorum disease. A-4, p. 80; A-4, pp. 931-943; C-8
      b. Nutritional diseases. A-1, Ch. 5; A-4, pp. 92-95; A-4, pp. 1075-1104; B-17, p. 5
         (1) Mineral deficiencies
         (2) Vitamin deficiencies
      c. Fungus diseases. A-1, p. 339; B-17, p. 30
         (1) Aspergillosis

d. Filterable virus diseases. A-1, pp. 340-346; B-17, p. 21
    (1) Infectious bronchitis. A-4, p. 968
    (2) Fowl paralysis. A-4, p. 81; A-4, pp. 944-959
    (3) Fowl pox. A-4, p. 83; A-4, pp. 977-986
    (4) Infectious laryngotracheitis. A-4, pp. 963-968

e. Parasites and parasitic diseases. A-1, pp. 346-354; B-17, p. 39
    (1) External parasites.
        (a) Lice. A-4, p. 89; A-4, pp. 1048-1054
        (b) Mites. A-4, p. 90; A-4, pp. 1055-1061
    (2) Internal parasites. A-4, p. 87; A-4, pp. 1007-1040
        (a) Intestinal round worms. B-17, p. 68

f. Diseases caused by protozoa. A-1, 354; B-17, p. 44
    (1) Coccidiosis. A-4, p. 89; A-4, pp. 1041-1047

g. Miscellaneous ailments. A-1, pp. 356-359
    (1) Bumblefoot
    (2) Cannibalism
    (3) Egg eating
    (4) Frozen combs and wattles
    (5) Heat prostration
    (6) Impacted crop (Crop-bound)
    (7) Inflammation of the intestines (Enteritis)
    (8) Tumors
    (9) Poisoning
        (a) Limberneck (Botulism)
        (b) Chemical
        (c) Rose chafer

h. Diseases and ailments of the reproductive organs. A-1, p. 359
    (1) Egg-bound
    (2) Eversion of the oviduct
    (3) Inflammation of the oviduct
    (4) Vent gleet

JOB 10. PRODUCING AND MARKETING HIGH QUALITY EGGS

A. Teaching aims—To develop the ability of the farmer
   1. To produce eggs of high quality.
   2. To maintain the high quality of eggs through handling.
   3. To market eggs of high quality.

B. References for this lesson—(see key list on pp. 21-23)
   1. (A)—1
   2. (B)—18, 19, 20, 21, 25, 28
   3. (C)—6, 12, 13

C. Suggested problems for study and discussion—
   1. Producing high quality eggs. A-1, pp. 371-374; B-20, pp. 77-81; C-6
      a. Scientific breeding. A-1, Ch. 13
      b. Proper feeding. A-1, Ch. 8
      c. Essential management practices. A-1, pp. 371-374
   2. Maintaining the high quality in eggs. A-1, pp. 374-376; B-18; B-19; B-21, p. 37; C-6
      a. Essential practices in caring for eggs on the farm. A-1, pp. 374-376; B-20, pp. 11-15; B-21, p. 16; C-6
         (1) Gathering
         (2) Cooling
         (3) Cleaning
         (4) Holding
      b. Quality affects consumption. A-1, p. 379; C-6; C-13
         (1) External quality. A-1, p. 366
         (2) Internal quality. A-1, p. 368
      c. Storing and preserving eggs for home use. B-20, p. 17; A-1, pp. 376-379; B-21, p. 32
   3. Grading and packing eggs. A-1, pp. 380-385; B-18; B-20, pp. 19-26; B-21, p. 22; C-6; C-12
      a. U.S.D.A. standards for grading. A-1, p. 381; C-6
         (1) Federal-State egg grading service. B-21, p. 35
      b. Packing eggs for marketing. A-1, pp. 382-385; B-21, p. 27
         (1) Egg packages. B-21, p. 24
   4. Methods of marketing eggs. A-1, pp. 385-388
      a. Shipping—parcel post, express, freight, motor truck.
      b. Direct to consumer
      c. Hucksters and local buyers
      d. Wholesalers and jobbers
      e. Packing plants
      f. Cooperative markets
   5. Maintaining proper temperatures during delivery. B-20, p. 15

IV. SUGGESTED REFERENCE MATERIAL

Books (A)

1. Knandel, Profitable Poultry Keeping. Orange-Judd Pub. Co., N. Y., 1941
2. Rice and Botsford, Practical Poultry Management, J. Wiley & Sons, Inc., N. Y., 1940
3. U.S.D.A., Food and Life, Yearbook of Agriculture, 1939
4. U.S.D.A., Keeping Livestock Healthy, Yearbook of Agriculture, 1942
5. U.S.D.A., Yearbook of Agriculture, 1936
6. American Poultry Association, Standard of Perfection. Book Dept., Everybodys Poultry Magazine, Hanover, Pa., 1942

Bulletins and Circulars (B)

1. Poultry Housing for Pennsylvania, Circular 115, The P.S.C.
2. Remodeling Farm Buildings for Poultry, Leaflet 81, The P. S. C.
3. Summer Shelter for Pullets, Leaflet 40, The P. S. C.
4. Poultry Houses and Fixtures, F. B. 1554, U.S.D.A.
5. The Ventilation of Poultry Laying Houses, Bul. 315, Agrl. Ext. Service, Cornell University, Ithaca, N. Y.
6. Electric Brooding Under Winter Conditions, Bul. 416, The P. S. C.
7. Feeding Chicks, Leaflet 44, The P. S. C.
8. Use Clean Feed To Grow Healthy Pullets, Leaflet 42, The P. S. C.
9. Feeding Systems for Laying Hens, Bul. 425, The P. S. C.
10. Management and Feeding of Hens for Efficient Egg Production, Leaflet 75, The P. S. C.
11. Supplying Water to The Laying Flock, Leaflet 80, The P. S. C.
12. Feeding Laying Hens, Leaflet 56, The P. S. C.
13. The Vitamin D Requirements of Growing Chicks and Laying Hens, Bul. 334, The P. S. C.
14. Poultry Pastures, Leaflet 79, The P. S. C.
15. Selecting Hens for Egg Production, F. B. 1727, U.S.D.A.
16. Prevent Chick Troubles, Cir. 121, The P. S. C.
17. Diseases and Parasites of Poultry, F. B. 1652, U.S.D.A.
18. Producing Market Eggs, Leaflet 41, The P. S. C.

19. Egg Rooms That Help Maintain Egg Quality, Leaflet 85, The P. S. C.
20. Eggs and Egg Products, Cir. 583, U.S.D.A.
21. Marketing Eggs, F. B. 1378, U.S.D.A.
22. The Poultry and Egg Situation (1943 Outlook), Bureau of Agricultural Economics, U.S.D.A.
23. The Agricultural Situation, Bureau of Agrl. Eco., U.S.D.A.
24. Poultry Outlook Material for Pennsylvania, Department of Agricultural Economics, The P.S.C.
25. Farm Poultry Raising, F. B. 1524, U.S.D.A.
26. Mites and Lice on Poultry, F. B. 801, U.S.D.A.
27. Ladino Clover Makes Good Poultry Pasture, Reprint Y-9-41, American Potash Institute, Inc., 1155-16th St., N. W. Washington, D. C.
28. "Inform-You-Form" leaflets covering Housing, Brooding, Ranges, Quality Eggs, Sanitation, Diseases, Parasites, Records, etc., American Poultry Journal, 536 S. Clark St., Chicago, Ill.
29. Poultry Diseases and Parasites—Their Causes—Prevention —Treatment. American Poultry Journal, 536 S. Clark St., Chicago, Ill.
30. How to Raise Chicks, American Poultry Journal, 536 S. Clark St. Chicago, Ill.
31. How to Make Hens Lay, American Poultry Journal, 536 S. Clark St., Chicago, Ill.
32. Poultry Litters, Hints to Poultrymen. Vol. 25, No. 2, N. J. Agrl. Exp. Sta., New Brunswick, N. J.
33. Avoiding Failure in the Poultry Business, Hints to Poultrymen, Vol. 28, No. 6, N. J. Agrl. Exp. Sta., New Brunswick.
34. Emergency Poultry Rations, Hints to Poultrymen. Vol. 29, No. 3, N. J. Agrl. Exp. Sta., New Brunswick, N. J.
35. Preservation of Meats and Poultry in Frozen-Food Lockers. Ext. Bul. 223, Michigan State College, East Lansing, Mich.
36. Poultry Record and Breed Associations. De Laval Diary, 1943
37. Agriculture's Wartime Production Capacity. An Interbureau Committee Report, U.S.D.A.
38. Uses of The 1940 Census Data in Schools. Monograph, U. S. Office of Education, Washington, D. C.

Visual Aids (C)

1. Poultry House Blue Prints, Everybodys Poultry Magazine, Hanover, Pa.
2. Planning Good Houses, American Poultry Journal, 536 S. Clark St., Chicago, Ill.
3. The Vitamin Chart With Emphasis on Poultry Nutrition, The Beacon Milling Co., Inc., Cayuga, N. Y.
4. Summary of Vitamins Required by Four-Footed Animals and Poultry, Standard Brands, Inc., 595 Madison Ave., at 57th St., N. Y.
5. Color Pictures of Poultry, American Poultry Journal, 536 S. Clark St., Chicago, Ill.
6. Beacon Egg Quality Merchandiser, The Beacon Milling Co., Inc., Cayuga, N. Y.
7. Fowl (avian) tuberculosis. Poster, U.S.D.A.
8. Pullorum disease. Poster, U.S.D.A.
9. Samples of feed, grit, and minerals.
10. Samples of vitamin carriers.
11. Catching hook and catching crate.
12. Egg candler and egg scales.
13. Samples of eggs—showing various qualities.
14. Samples of poultry feeders and waterers.
15. Samples of brooder thermostats.
16. Samples of poultry record forms, Commercial Feed Companies.
17. Purina Plan—Making Every 4 Square Feet of Floor Space Produce 200 Eggs, Purina Mills, St. Louis, Mo.
18. Selecting Hens for Egg Production. Film Strip, No. 126, (BAI-ES) U.S.D.A.
19. Poster: A Guide To Quality Poultry, U.S.D.A.
20. Motion Picture: Producing Quality Poultry, U.S.D.A.
21. Poultry Outlook Charts, U.S.D.A.

V. SUGGESTED APPROVED PRACTICES WHICH SHOULD DEVELOP FROM THE COURSE

1. Increase the production of eggs efficiently.
2. Provide adequate shelter and protection for poultry economically.
3. Brood chicks efficiently and well.
4. Rear a flock of well-developed pullets.
5. Supply proteins in well-balanced rations.
6. Supply carbohydrates and fats in well-balanced rations.
7. Feed minerals, vitamins, water, green food, and grit in accordance with the requirements.
8. For uniform growth and development, feed chicks and growing stock in accordance with their requirements.
9. Feed laying and breeding hens in accordance with their food requirements.
10. Feed hens for uniform quality of eggs.
11. For the laying and breeding flock, select pullets that are healthy, well-bred, and desirable individuals.
12. Purchase healthy chicks of desirable breeds and strains for maximum egg production.
13. Cull the laying flock regularly; market well-finished culls for meat.
14. Prevent and control the common diseases and parasites of young and mature stock.
15. Maintain the health of the young and mature stock by practicing clean management.
16. Collect eggs frequently, cool eggs quickly, clean eggs thoroughly, grade eggs carefully, and market eggs regularly, to maintain high quality of product marketed.
17. Recognize the demands of the market with respect to size and quality of eggs.

Aaron Bldg.

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